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# ON CRANIOTOMY AND VERSION.

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With coupts from the author.

ON THE RESULTS  
OF  
RECENT IMPROVEMENTS IN OPERATIVE MIDWIFERY  
IN DIMINISHING THE NUMBER OF CASES REQUIRING  
EMBRYOTOMY.

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In this paper I propose to state the effects which the more recent improvements in the method of effecting delivery in cases of contracted pelvis, must have had on the proportion between the favourable and unfavourable results of craniotomy, and then, by reference to the previous statistics of the operation, to indicate what its value now appears to be.

The three changes which seem to act most powerfully in producing such an alteration are,—the use of chloroform, the improvements in the form and in the manner of application of forceps, and the employment of podalic version.

The effects of the use of chloroform in increasing the death-rate of craniotomy must be considerable, for though it renders the operation somewhat easier, and perhaps even safer, still this is not the case to such an extent as can materially affect the statistics of the operation; while, on the other hand, its exhibition, by permitting the substitution, in the milder cases of contraction, of a less severe method of treatment, deprives craniotomy of a number of the very cases which formerly furnished the greater part of its recoveries. For in many cases where, without chloroform, craniotomy would have been resorted to, the use of that agent, by procuring an early dilatation of the soft parts, gives an opportunity for delivery by forceps, or, by bringing about the same relaxation, accompanied by the suspension of uterine action, enables us to extract by turning.

While chloroform has thus been doing much to facilitate the use of the forceps, great improvements have also been made in their form and in the manner of using them. This has not been suddenly effected; but the profession has, in course of time, gradually become better acquainted with the shape of the pelvis, and with many other points connected with their use, which has not only enabled them to use the old form of instruments more efficiently, but has also occasioned successive changes in their shape. The result of these improvements has been not only to increase the safety of the operation in the cases to which their use was formerly confined, but, in addition, to extend their application to many of the

less severe cases of contraction then considered to require craniotomy, thus again tending to diminish the favourable results of craniotomy in those cases to which its application is thereby chiefly confined.

Podalic version, which has long been employed for other purposes, and even suggested at an earlier period in the cases now under consideration, has only comparatively recently been much used in labour rendered difficult by pelvic distortion. Not only is it, however, now used in many cases in which forceps would otherwise have been employed, but it has been performed with success as regards both mother and child, in cases where the deformity was too great to admit of their use.

It was some time ago shown very clearly by Dr Simpson, that in many cases of pelvic distortion the child was born alive when the lower extremities presented, while in the other labours of the same patients none were saved when the head presented,—delivery through the natural passages having been found impossible without craniotomy. He therefore proposed in such cases always to turn and extract by the feet, and the value of this method of practice has been fully established by its results; and even when the child cannot be extracted alive by this operation, but dies in the course of it, or in consequence of additional operative procedure being found requisite, the danger to the mother is inconsiderable compared with that entailed by instrumental delivery in the natural position of the child.

That the use of version has therefore, in the same way as the improvements relating to forceps, and to an even greater extent, lowered our estimate of the value of craniotomy, will be at once admitted; though at the same time it may be remarked, that if it were prefaced, when possible, by turning, much might be done to diminish the mortality in the cases where it is still performed.

But, in estimating the effect of all these improvements in reducing the number of cases formerly held to require craniotomy, we must especially take into account that it is only to the milder cases of pelvic distortion they are applicable; and, as the occurrence of the more formidable cases of contraction becomes rarer in a ratio which increases very rapidly with its increase in degree, a proportionally rapid diminution of the number of cases still requiring craniotomy must be a necessary consequence; while the unfavourable circumstances under which it has to be performed must be accompanied by a corresponding increase in the ratio of mortality attendant upon it.

To enable us to determine precisely the present value of the operation of craniotomy, accurate statistics would be required; but as these do not exist, I must instead attempt an approximation to the present death-rate by inferring from previously existing statistics the probable results of what has now been stated. The previous statistics are well known, and the mortality deducible therefrom is

1 in 4 or 1 in 5; therefore, if what I have already stated as to the effects of improvement in practice be correct, it will be quite safe to assume the present mortality to be *very considerably greater than 1 in 4 or 5*; or probably 1 in 3 would not be a rash assumption.

The next step towards the attainment of a proper appreciation of the merits of the operation seems to be the comparison of its results with those of other operations applicable to the same class of cases. As craniotomy is now confined by the best authorities to cases in which delivery cannot be effected by means of forceps or turning alone, and as the mortality of these operations is hardly appreciable, it is evident that a comparison between *them* and craniotomy may be left out of consideration, as affording no criterion for such an estimate as that at which we wish to arrive; but with Cæsarean section the case is different, for although at present it is true that that operation (in consequence apparently of reliance on old statistics) is considered justifiable only where craniotomy cannot be performed with success as regards extraction, the difference in the mortality is, I believe, by no means certainly in favour of craniotomy.

With regard to the Cæsarean operation, we are now in a much better position to obtain success than we were a few years ago; and I believe there is a paper by M. Dufeilly on the operation, in which he has collected the statistics of all the cases performed since 1858, and shows that, where the operation has been performed with ordinary care, at the proper time for interference, the results have been about 75 per cent. of recoveries, that is to say, 1 death in 4, being not much more than the result of craniotomy as performed under the old regime, and consequently in all probability more favourable than those of the same operation, limited in its application, as it may now be said to be, to a small number of cases of a very unfavourable description. There is another point also to be noticed in favour of Cæsarean section. In this country we have improved rapidly of late in the performance of ovariotomy,—an operation very similar in many respects, but having additional complications of a serious character; and, if we can produce by it such favourable results as one death in four, where, by enormous incisions and dissections, we remove from the abdomen a part of the frame itself, and are under the necessity of leaving behind much that must separate by suppuration, how much more success ought we to expect, in removing from the same cavity a foreign body, without being obliged to make such extensive wounds, and not necessarily having to leave behind anything to slough away. Besides, if we examine the individual reports of cases of Cæsarean section, we shall find, on the one hand, that in many of the fatal ones, setting aside the question how long the patient had been in labour, the operation had been so ill done that death could not fail to ensue; and, on the other hand, that among the recoveries there were some where it had been so badly

done, as almost to put a favourable result out of the question, leading us to infer that on both these accounts, if due care had been taken, a much higher success might have been attained.

Since writing the above, I have heard that Dr Tyler Smith has written a paper advocating the abolition of craniotomy, but I am sorry I have not yet had an opportunity of perusing it so as to consider his objections, many of which must be the same as those now brought forward; but I am glad to hear that I do not stand alone in questioning the correctness of the value at present usually put upon the operation.

From the foregoing it will be apparent, that unless something considerable can be done to render craniotomy a less fatal operation than it is at present, Cæsarean section must prove, at least, a formidable rival. I have already stated my belief that a good deal might be done in this direction for a certain class of the cases held to require craniotomy, by the use of turning as a preliminary to the operation; but as, after deducting these, there would still be left a great many cases, with a mortality certainly even greater in proportion than that of the whole number in which craniotomy is at present performed, it would become only the more incumbent on us to see if we should really be justified in preferring it to Cæsarean section for the cases where turning cannot be effected *on account of the narrowness of the pelvis alone.*

The best form in which I can express my views as to the value to be assigned to craniotomy, seems to be the suggestion of rules for its employment; but before attempting this, it may be as well to consider the nature of the rules at present generally accepted.

At present we have a tolerably sufficient knowledge of the indications demanding interference of some kind, but the limits beyond which the different operations ought not to be attempted are so variously laid down, as to give rise to much confusion. The principal guide given for the treatment of such cases is the minimum number of inches in the different diameters of the pelvis through which a full-sized child can be extracted,—in one case by means not necessarily destructive to it, and, in another, by means in principle involving its destruction. This guide is obviously unsatisfactory, for it is hardly possible to get any two men to agree as to the measurement in inches of the brim of the pelvis in a patient; and, moreover, there are great differences of opinion as to the exact measurement required to decide which operation ought to be attempted in any given case. Then these measurements are laid down without reference to the probable size of the child, which, as we know, may vary in weight from six to twelve, or even fourteen pounds, at the full time. Besides, its consistency may also alter the prospect of the case most seriously. We have also another source of dissatisfaction in dealing with this operation, viz., the possibility, if the result be successful, of a doubt remaining as to whether a milder method of interference might not have been at

least as safe; and we never can be so sure after such a success, as we are in most other surgical operations, that we have adopted the best possible means.

I shall now merely, in conclusion, give the rules to which I have been led by personal observation of cases of labour rendered difficult by contraction of the pelvis, combined with the study of published reports of individual cases of the kind.

*1st,* In all cases where the indications for interference are sufficient, the forceps should be applied, provided there is a reasonable chance of their being successful without injury to the mother.

*2d,* Should forceps be found unsuitable, recourse should be had to version, even though the extraction of the head with instruments be afterwards required.

*3d,* Should the pelvis admit of turning, but be too small to allow the extraction of the body, we ought seriously to consider the advisability of Cæsarean section.

*4th,* Should the pelvis be too small to admit of turning, the arguments in favour of Cæsarean section must be still stronger.

I have divided the cases included in the last two rules into two sets, one where turning is possible, and the other where it is impossible, because, I believe, that such a means of distinction is better than the old rule by measurement in inches; and I have not insisted on Cæsarean section in the former of these cases where turning was found possible, because I have heard of the head having been re-turned and craniotomy having been performed on it "in situ," but with a fatal result, and it is possible (though improbable) that some successful precedent may have given rise to such a method of practice.

The whole of these remarks on craniotomy have been made with reference to the size of the pelvis alone, and though I have said much in disparagement of the operation, still I admit that there are exceptional cases, where, from the state of the uterus or some other cause, it appears to be inevitable.

There is another point I have not taken notice of, viz., the value of the life of the child. I have not done so because, though I think it might be an additional reason in favour of Cæsarean section, still it cannot at any time be compared with that of the mother, so as to materially influence our decision, where there is a more reasonable hope of preserving the latter by adopting other means; but wherever in any individual case we come to the conclusion that Cæsarean section gives to the mother a chance of recovery equal to that afforded by any other means that can be adopted, then the additional chance of saving the child becomes an important element in determining our choice.

# ON THE ADVANTAGES OF A MORE EXTENDED USE OF VERSION IN CASES OF DISPROPORTION.

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IN a former paper I mentioned the increased use of turning to be one of the principal means by which the employment of craniotomy has been diminished, and suggested that it might be practised still more extensively than hitherto, as a means both of avoiding craniotomy, and also of rendering it less dangerous where inevitable ; and, moreover, stated it to be my opinion, that, where the disproportion was very great it was the only available means for the certain determination of the propriety of craniotomy. I recommended that, in all head presentations in which the forceps will not succeed, turning should be attempted, even though there should be no hope of extracting by means of it alone.

The advantages of such a use of version seem to be the following :—*1st*, That, by enabling us to ascertain definitely the proportion between the size of the child and that of the passages, it may prevent recourse being had to unnecessarily severe operative procedure, which might otherwise be resorted to from ignorance of that proportion. *2d*, That in cases which, without turning, would require craniotomy, the application of forceps to the head, *after turning*, will often be sufficient to effect delivery with a better result to the mother, and frequently without injury to the child. *3d*, That, even in the cases where version does not enable us to avoid craniotomy, its previous employment seems to render that operation easier of performance without adding in any degree to the risk.

There can be no doubt with regard to the first advantage, viz., its usefulness as a means of diagnosis, enabling us to avoid needless severity of operation, because it is manifestly the only method by which the *relative* size of the child to the passages can be determined ; and, in the absence of such evidence, mistakes, proving serious both to mother and child, have often occurred even in good hands. I may mention, in illustration of this, that in cases of turning, where nothing else than craniotomy could have otherwise been performed, the child has often been unexpectedly extracted alive. Moreover, there have

been cases in which craniotomy has been performed, although the deformity was so great as to detain the breech of the child, and the result has been, as far as I have been able to discover, uniformly fatal. Some cases also have been recorded where, after craniotomy had failed, the Cæsarean operation had eventually to be performed. Now, in these cases, had turning been attempted, as a means of diagnosis, it would have been ascertained at once whether the breech could pass or not, and thus a great amount of time would have been saved, and unnecessary injury avoided, and the propriety of Cæsarean section at once discovered.

The second benefit gained I have stated to be, that the use of forceps with turning as a preliminary, may often enable us with advantage to avoid craniotomy. Such a use of forceps has never found its way into general practice, although there has been good authority for it. Smellie was the first to propose it, and when he did deliver by this method, his results were highly satisfactory. Dr Granville of London has followed his example, and found the forceps so useful in such circumstances, that he has twice recorded a series of successful cases. I have also met with others who, from their success in this mode of operating, strongly advocate it.

The third advantage which I have stated to be derived from turning, is that, should the forceps fail to procure delivery, or appear inadmissible, the operation of craniotomy will be more easily performed *after turning*, and with probably less risk than if the head were presenting. I have been led to form this opinion principally from the good recoveries cases are generally reported to have made where craniotomy has been performed after extraction of the body, and also from the invariable shortness of the description given of the operation. Dr Ramsbotham, in speaking of craniotomy under such circumstances, says, that perforation alone is generally sufficient; and in only a very few cases have I heard of the head requiring to be farther broken up. It has often happened that, after turning, the extraction of the head entire has been found impossible; but the description of the operation required to complete delivery has, in every report I have been able to find, been very concise, leading to the inference that no great difficulty was experienced. As an instance, I may refer to the first volume of the Transactions of the London Obstetrical Society, where the description of a case runs as follows:—"The occiput was perforated, the brain washed out, the cranial bones crushed inwards, and the head extracted. The placenta followed, the bleeding ceased, and the patient recovered without an ill symptom." The late Dr Ramsbotham met with a number of cases of the kind, and yet in recording them, he gives us no reason to suppose the operation to have been rendered either more difficult or more dangerous by the mal-position of the head. Smellie also seems to have found it an easy operation, if we can judge from the contrast between his lengthy details of the ordinary form of craniotomy, and his concise and

simple accounts of the use he made of his crotchet after the birth of the body.

On the other hand, when craniotomy is done on the head while presenting, great difficulty is often met with, and many hours have often been spent on the operation, even where the pelvis was so wide as easily to permit the subsequent passage of the body. In addition, I would point out the fact, that cases have been related where craniotomy alone having failed to effect delivery, turning has succeeded in procuring extraction with such ease that we must conclude that, though the head had not been sufficiently broken up to permit its propulsion through the pelvis, it had yet been broken up much more than was required to allow its being drawn through after the body.

From all this I infer, that instead of adding to the danger of the operation of craniotomy, turning must diminish it, by enabling us to dispense with an amount of breaking up of the head which, *per se*, is much more likely to do harm than the "operation" of turning. There are many who, from their experience of version under all circumstances, assert that there is at least very little danger to be apprehended from the operation when properly performed, even without chloroform to quiet the uterus. Dr Ramsbotham states, that he never saw any bad results from even the most difficult cases of turning; and his employment of the operation has been considerable. I may also refer to Dr Figg's well known views and experience. Moreover, Mr B. Hicks has improved greatly on the old method of operating, which had already been considered highly satisfactory. I have turned frequently for malpresentation, and find that, where the pelvis was normal, the mother has recovered much better than after an ordinary presentation. In some, where the pelvis was so contracted as to prevent their having a live child without turning, the results have been quite as good. Also, in the few cases I have had where the deformity was such as to require traction so great, that one or two of the bones of the pelvis and trunk of the child gave way, the recovery has been invariably as rapid as after an ordinary labour. In such cases I have never hesitated to use a great deal of force in drawing the body through, with the full confidence that, even if it came to the worst, the head would be more easily and safely extracted in that position than if acted on when presenting in the usual manner. The reason so much less fracture is required after turning than before, seems to be, that, as the occiput is the greatest obstruction, and requires to be fractured as near the neck as possible, when craniotomy is performed on the head presenting, one or both parietal bones, the greater part of the occipital, and often the frontal, have to be cut away to allow of that point being reached; whereas, after turning, it is the nearest point, and perforation alone should almost always be sufficient to allow the bones to fall in as required. If, on the other hand, more than simple perforation be necessary, the hold afforded by the body

should be a great assistance. Besides, it must be recognised as of the utmost importance that, in delivering the head, the force applied is *traction* at the centre of the resisting part, while in cases where the head presents, it is *propulsion* by a hook inserted behind the head, involving either the employment of a much greater amount of force or a much greater extent of fracture. An idea of the comparative merits of the two operations may be obtained by the following illustration. If we take a hollow india-rubber ball and try to *press* it through a round aperture a little smaller than its diameter, we shall find that it will flatten out and thus *increase* in diameter; and, if we make an incision in the part protruding, it will flatten out still farther; but if, on the other hand, we attempt to *pull* it through by means of a string attached to it, the ball will elongate, and so *diminish* in diameter; and if incised, will collapse, even although the aperture be a small one, without farther limit than is imposed by the substance of the ball.

I have now given reasons for holding that preliminary turning lessens the danger of craniotomy by rendering the operation less difficult, prolonged, and extensive. I have further to state, that it lessens the danger by enabling us to perform the operation at a much more favourable time. In all cases where the forceps are unsuitable, or have failed to procure delivery, if turning is had recourse to, it will be performed at once, and thus craniotomy, if necessary, will be demonstrated to be so, and consequently resolved on and performed at a much earlier, and to that extent more favourable period of the labour than would be the case if the head were allowed to remain presenting.

Besides the danger resulting from exhaustion, etc., caused by the delay both previous to, and in the performance of craniotomy on the presenting head, there is, it must be noted, some risk of rupture of the uterus before delivery by the operation in question. If the uterus ruptures during labour, the lesion always takes place after the os is pretty well dilated; and a very large proportion of the cases of rupture have met with the accident either while the operator was waiting till the labour was sufficiently advanced for the performance of craniotomy, or during the operation. If, on the other hand, turning is applied to such cases, it will almost certainly be performed before the labour has advanced so far as to render a rupture of the uterus at all likely; and the body being once delivered there is no risk of such an accident during the extraction of the head, however long the operator may delay in breaking it up.

From these considerations, I would therefore strongly recommend turning to be attempted in all cases of disproportion too severe to permit of delivery by the forceps, unless the necessity of Cæsarean section be plainly indicated, with the full assurance that, if farther instrumental procedure be required, instead of complicating, the turning will be found to render extraction much more easy.

Moreover, I think, that those who admit that in cases of diffi-

culty the head can be more easily extracted by version, on account of the advantage gained by the improved position, combined with the increased power of adaptation consequent on that position, must concede that, if the power of adaptation be increased by subsequent crushing, the assistance derived from version must also in these cases be increased.

Finally, even though great improvements in the manner of breaking up the head should be introduced, still the use of version as a preliminary will continue to be a great assistance, and its advantages as a means of determining the cases in which the necessity for craniotomy exists must also continue to be of the utmost importance.